

FIG.1

PREDICTED vs ACTUAL COST COMPARISON
OF
TECHNOLOGY COST ESTIMATE WORKSHEET




TECHNOLOGY	NAME	PREDICTED	ACTUAL	% DELTA
CM4L 3LM	OMNI	\$872	\$833	4.7%
CM4LP 3LM	PHEONIX	\$805	\$856	-6.0%
CM5S 4LM	MUSTANG	\$1,188	\$1,121	6.0%
CM5S1 5LM	RACER	\$1,236	\$1,227	0.7%
CM5X 4LM	APACHE	\$1,191	\$1,152	3.4%
CM5X2 4LM	FURY	\$1,248	\$1,167	6.9%
CM6S 4LM	HURRICANE	\$1,322	\$1,340	-1.3%
CM6S2 4LM	TIGGER	\$1,407	\$1,299	8.3%
CM6S2 5LM	SC / 98	\$1,560	\$1,469	6.2%
CM6SF 4LM	PYTHON	\$1,531	\$1,437	6.5%
CM6SF 5LM	LONGTRAIL	\$1,816	\$1,691	7.4%
CM6X 4LM	TYPHOON	\$1,704	\$1,670	2.0%
CM7S 6LM	LONESTAR	\$2,464	\$2,607	-5.5%
CM7SF 3LM	COMMANDER	\$1,918	\$2,020	-5.0%
CM8S 4LM	BLIZZARD	\$2,238	\$2,240	-0.1%
SIGE6SF	COPERNICUS	\$2,809	\$2,726	3.0%
ICEC8S2 6LM	MAJESTIC*	\$3,214	\$3,325	-3.3%
ICEC9S 7LM	MAKO**	\$3,870	\$3,534	9.5%

* Predictive Cost Estimated 12 Months Prior to Actual

** Predictive Cost Estimated 18 Months Prior to Actual

FIG.2

FOR THE FOLLOWING TECHNOLOGIES:

TECHNOLOGY _____➔		← 301	<u>300</u>
PHOTO GROUNDRULE _____➔		← 302	
CURRENTLY IN PRODUCTION Y OR N _____➔		← 303	

IF "N" 10% CONTINGENCY ADDED

[illegible]

BEOL BASE COST →
BASE COST = 4 THIN LEVELS OF METAL

321 ↗ 322 ↗ 370

323 Y or N 324 # OF LOM 325 326

Aluminum
Thin Copper
Thick Copper

25/level for Cu
60/level for Cu

0
0
0

0
0
0

FIG. 3A

ADD META LEVELS:
For products with MORE than 4LM
Indicate type of metal and # of levels

327 Y or N # OF LOM TO ADD 328

Aluminum			25/level for Cu	0	0
Thin Copper			60/level for Cu	0	0
Thick Copper				0	0

BEOL BASE COST WITH LEVEL OF METAL ADJUSTMENTS → 331 329 330

BASE COST ADDER FOR COPPER Y or N 333 334 335

ADDITIONAL BEOL LEVELS:
25/LEVEL ADDER FOR CU TECHNOLOGY Y or N

MC LEVEL		337	0	338	0
MIM CAPACITOR			0		0
TD LEVEL			0		0

336

ADDITIONAL BEOL LEVELS 339 342 340

TOTAL BEOL COST WITH OPTIONS 341 340

COST SUMMARY		390
	PLAN FULL CAPACITY COST	MATURE FULL CAPACITY COST
BASE COST	\$0 313	\$0 314
OPTIONAL COST	\$0 317	\$0 318
RAW WAFER	\$0 351	\$0 352
SUPER COMMON	\$0 353	\$0 354
SUB TOTAL	\$0 355	\$0 356
CONTINGENCY OF 10% (NOT CURRENTLY IN PRODUCTION)	\$0 357	\$0 358
TOTAL PREDICTED COST	\$0 359	\$0 360

*Shaded boxes need input

FIG.3B

FIG.3A

FIG.3B

FIG.3C

EQUATIONS FOR TECHNOLOGY COST ESTIMATE WORKSHEET

FEATURE	FULL CAPACITY COST EQUATION	MATURE COST EQUATION	WHERE:	HOW DERIVED
FEOL BASE	$Y=272X^{-0.53}$	$Y=241X^{-0.493}$	$Y = \text{FEOL Base Cost}$ $X = \text{Groundrule}$	Least Squares Analysis
BEOL BASE	$Y=417X^{-0.486}$	$Y=388X^{-0.461}$	$Y = \text{BEOL Base Cost}$ $X = \text{Groundrule}$	Least Squares Analysis
BR RESISTOR	$Y=15.1X^{-0.362}$	$Y=13.5X^{-0.352}$	$Y = \text{BR Resistor Cost}$ $X = \text{Groundrule}$	Least Squares Analysis
KV LEVEL	$Y=15.5X^{-0.297}$	$Y=12.5X^{-0.489}$	$Y = \text{KV Level Cost}$ $X = \text{Groundrule}$	Least Squares Analysis
TAILOR VTS	$Y=49.8X^{-0.048}$	$Y=45.9X^{-0.0302}$	$Y = \text{Tailor VTs Cost}$ $X = \text{Groundrule}$	Least Squares Analysis
DUAL GATE	$Y=38.2X^{0.803}$	$Y=33.7X^{0.815}$	$Y = \text{Dual Gate Cost}$ $X = \text{Dual Gate Levels}$	Least Squares Analysis
OP RESISTOR	$Y=19.8X^{-0.512}$	$Y=17.9X^{-0.502}$	$Y = \text{OP Resistor Cost}$ $X = \text{Groundrule}$	Least Squares Analysis
MC LEVEL	$Y=58.8X^{-0.597}$	$Y=53.9X^{-0.584}$	$Y = \text{MC Level Cost}$ $X = \text{Groundrule}$	Least Squares Analysis
METAL LEVELS	$Y=111X^{-0.302}$	$Y=103X^{-0.282}$	$Y = \text{Metal Level Cost}$ $X = \text{Groundrule}$	Least Squares Analysis
MIM CAPACITOR	$Y=34.2X^{-0.523}$	$Y=30.8X^{-0.533}$	$Y = \text{MIM Cap Cost}$ $X = \text{Groundrule}$	Least Squares Analysis
TD LEVEL	85	77	NA	Direct Measurement
EDRAM	475	450	NA	Direct Measurement
CU ADDER	100	80	NA	Direct Measurement

FIG.4

TECHNOLOGY COST MODEL OVERVIEW

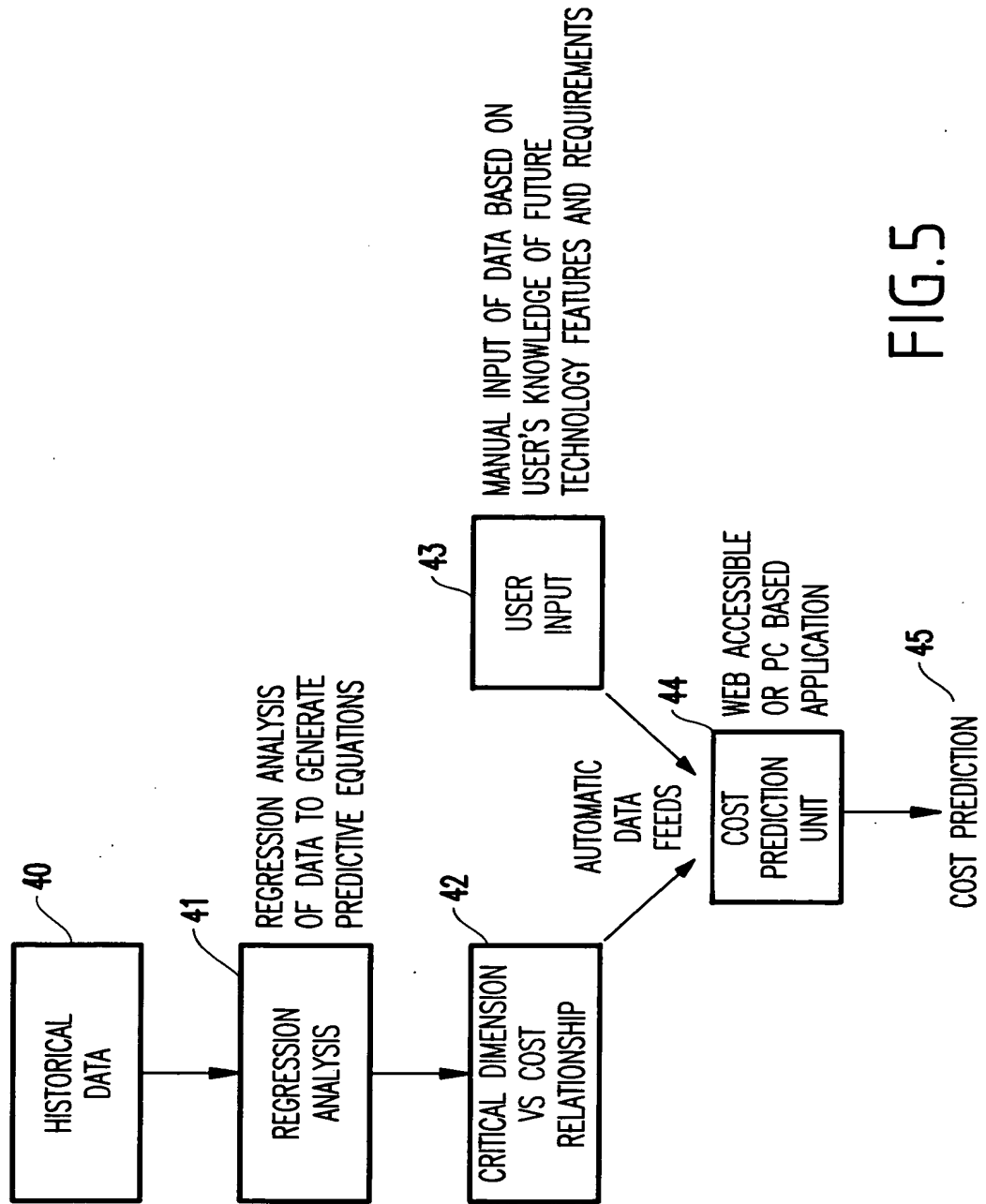


FIG. 5

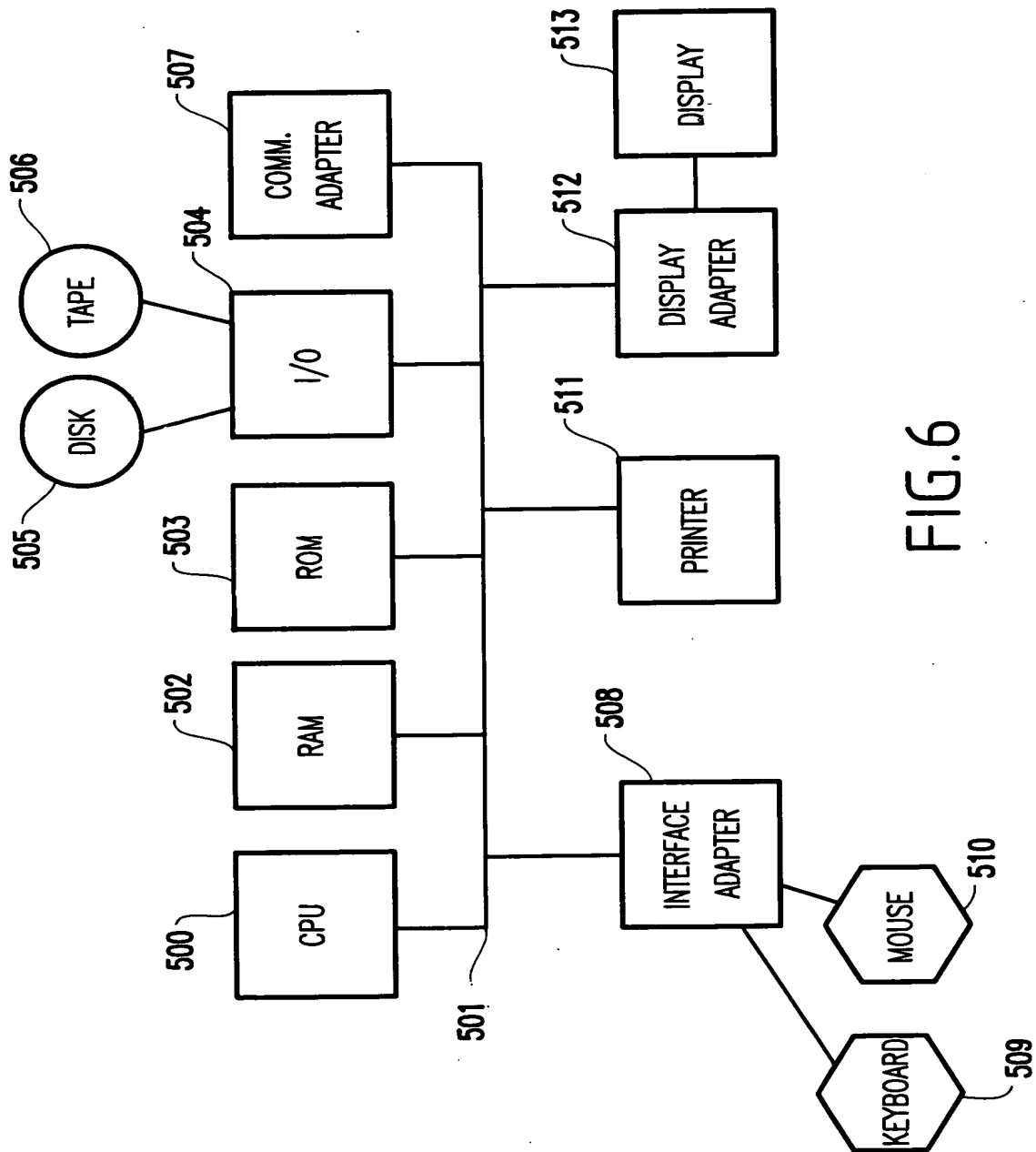


FIG.6

FIG. 6 is a block diagram of the system architecture.